AKENTEN APPIAH-MENKA UNIVERSITY OF SKILLS TRAINING AND ENTREPRENEURIAL DEVELOPMENT
INSTITUTE FOR TEACHER PROFESSIONAL DEVELOPMENT AND LIFELONG LEARNING (ITPDLL)
END OF FIRST SEMESTER EXAMINATION 2024/2025

COURSE CODE	EJM 231
COURSE TITLE	THEORIES IN THE LEARNING OF MATHEMATICS (JHS)
DURATION	TWO HOURS
IN	
IN	

SECTION A (20 MARKS)

Each of the questions below is followed by four options, lettered A, B, C, and D. Choose the option that best completes each statement and write the letter A, B, C, or D of the option you have chosen in your Answer Booklet.

1. What aspect of learning does cognitive theory emphasize?
   A. Learning through punishment and rewards.
   B. Knowledge construction through mental processes.
   C. Mimicking behaviour observed in the environment.
   D. Rote memorization of information.

2. Which of the following is a core value emphasized in the mathematics curriculum?
   A. Avoidance of challenges
   B. Competition over collaboration
   C. Respect for diversity
   D. Rigidity in thought

3. Which of the following is a characteristic of differentiation in teaching?
   A. Avoiding modifications to lesson plans.
   B. Encouraging competition over collaboration among students.
   C. Providing the same task to all learners regardless of ability.
   D. Using varied instructional strategies to meet different learners' needs.

4. Which of the following teaching theories emphasizes learning through experience and active participation?
   A. Behaviorism
   B. Classical Conditioning
   C. Constructivism
   D. Direct Instruction

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5. A body of skills that teachers at all levels seek to develop in their learners are known as......

    A. core competencies.
    B. general aims.
    C. specific aims.
    D. learning outcomes.

6. Which of following techniques can be used to help visual learners to develop, explore, and enhance their learning strengths?

    A. Reading aloud.
    B. Reciting information to them.
    C. Use tunes or rhymes as mnemonic devices.
    D. Using graphics to reinforce their learning.

7. A student who enjoys solving puzzles and reasoning through problems is likely strong in ...

    A. bodily-kinesthetic Intelligence.
    B. logical-mathematical Intelligence.
    C. musical Intelligence.
    D. naturalistic Intelligence.

8. The following are factors that affect the stability of attitude towards teaching and learning *EXCEPT*......

    A. learning environment.
    B. meaningful teaching methods.
    C. school content.
    D. teacher environment.

9. The following are the characteristics of constructivist theory usage in the classroom *EXCEPT*......

    A. child-centred activity.
    B. investigative learning.
    C. learner constructing own knowledge.
    D. teacher as dictator.

10. Which of the following is a characteristic of a teacher who holds traditional beliefs about mathematics? They......

    A. emphasize memorization of formulas and procedures.
    B. encourage students to explore multiple solutions to problems.
    C. focus on collaborative and inquiry-based learning.
    D. use technology extensively in the classroom.

11. A student who excels in recognizing patterns in nature and applying them to mathematics has high ....
    A. kinesthetic Intelligence.
    B. musical Intelligence.
    C. naturalistic Intelligence.
    D. visual-spatial Intelligence.

12. Development of self-assessment and peer-assessment skills fall into which category?
    A. Assessment about learning
    B. Assessment as learning
    C. Assessment for learning
    D. Assessment of learning

13. The process of using a variety of instructional techniques aimed at moving learners progressively towards stronger understanding is termed as...............................
    A. monitoring
    B. objectives
    C. pedagogy
    D. scaffolding

14. The following are beliefs of the constructivist teacher about the nature of mathematics *EXCEPT*............
    A. dynamic and expanding.
    B. fixed body of knowledge.
    C. problem solving and figuring out patterns.
    D. way of thinking.

15. Which of the following assessment forms is summative in nature?
    A. Assessment as learning
    B. Assessment for learning
    C. Assessment of learning
    D. Learner-centred assessment

16. What is the importance of teachers' beliefs about mathematics in their teaching practice?
    A. It decreases student engagement in the classroom.
    B. It has no impact on teaching effectiveness.
    C. It influences their instructional decisions and strategies.
    D. It limits curriculum flexibility.

17. What is the primary focus of the new Ghanaian mathematics curriculum?
    A. Development of critical thinking and problem-solving skills.
    B. Emphasis on theoretical concepts only.
    C. Memorization of mathematical facts and procedures.
    D. Repetitive practice of computational skills.

18. In which stage of cognitive development, according to Piaget, do children begin to demonstrate logical thinking, but still struggle with abstract concepts?
    A. Concrete operational stage.
    B. Formal operational stage.
    C. Preoperational stage.
    D. Sensorimotor stage.

19. What name is given to the value of 4 in the curriculum reference number; B7.2.1.3.4?
    A. Content standard
    B. Learning indicator
    C. Strand
    D. Sub-strand

20. Which of the following is a key reason for making mathematics a compulsory subject in Ghana's basic school curriculum? To............................
    A. develop mathematical literacy for national development.
    B. focus solely on cultural heritage.
    C. prepare students for careers in arts and literature.
    D. reduce the emphasis on science and technology

SECTION B (5 MARKS)

This section contains statements. Write true or false for each of the following statements

21. Technology integration in mathematics education limits collaboration among students.

22. The broad areas/sections or the Thematic content to be studied in the JHS Mathematics curriculum are called sub strands.

23. A student who prefers to work alone is likely to have a strong intrapersonal intelligence.

24. According to the constructivist theory, knowledge is seen as static, never changing despite our experiences.

25. In the JHS Mathematics Curriculum, learners learn better when they interact and share ideas with adults and other knowledgeable peers around them.

SECTION C: MATCHING (5 MARKS)

This section contains two columns, columns A and B. You are to match items in Column A with those in Column B.

No.	Key terms	Explanations
26.	Scaffolding	A. The potential level of learning a student can achieve with guidance from a more knowledgeable other.
27.	Collaborative learning	B. Strength in reasoning and problem-solving.
28.	Teacher beliefs	C. The application of mathematics in solving real-world problems.
29.	Constructivist learning	D. Providing equal opportunities for all students, regardless of their background.
30.	Logical-Mathematical intelligence	E. A theory that emphasizes the role of social interaction and cultural tools in learning.
		F. A theory that focuses on learning as a systemic and socially situated phenomenon.
		G. Support students gradually until they obtain total independence in their learning.
		H. A teaching method where students explore and construct their own knowledge through guided inquiry.
		I. Belief that ability can improve with effort
		J. Teachers' personal assumptions and ideologies about mathematics, its teaching, and learning.
		K. A teaching approach where students work together to solve problems and share knowledge.
		L. Learning by creating and experimenting with ideas
		M. A learning approach where students engage in complex, real-world projects and identification of patterns to solve problems.

SECTION D (10 MARKS)

Provide short answers to the following questions

31. A teacher collects and reads the work of the class, then plans and adjusts the next lesson to meet learners need. What form of assessment is the teacher doing?.....................................

32. Under the teaching philosophy in the new curriculum, the effective way of teaching mathematics should be...

33. State **TWO** reasons why we teach and learn Mathematics in all Junior High Schools.

34. Outline **ONE** way mathematics relates to society.

SECTION E (20 MARKS)

Answer only One question from this section

35. a) Define the Multiple Intelligence Theory. [4 Marks]

   b) Discuss any four of the Multiple Intelligence Theories proposed by Howard Gardner.

                                                              [16 Marks]

36. Discuss the five(5) factors that influence the teaching and learning of mathematics in schools. [20 Marks]

37. a) What is differentiation in education? [3 Marks]

   b) Explain how differentiation as a pedagogical approach can be achieved through the following;

      i) by task

      ii) by support

      iii) by outcome. [12 Marks]

   c) Briefly explain the teaching philosophy of the new JHS mathematics curriculum.

                                                             [5 Marks]